assumes the fundamental fact on which the theory of segregation rests. All that is wanting is its recognition as a universal principle on which all permanent divergences, whether varietal or specific, necessarily depend. In the formation of domestic variations it is fully recognized; for he says, "It is only by isolation and pure breeding that any specially desired qualities can be increased by selection" (p. 99). If experimental biology shows this to be a constant law, is there any good reason for not applying it in the general theory of organic evolution? Seeing it is admitted that artificial selection, unaided by isolation, is of no avail in producing divergent races, how can it be claimed that natural selection, unaided by isolation, is of any avail in producing varieties and species? Again, as in domestication the segregate breeding of other than average forms always produces divergence, have we any reason to doubt that, when the same process takes place in the grouping of organisms in a natural state, the result will also be divergence?

The discrepancies to which I have referred are, it seems to me, due to deficiencies in the theory which Mr. Wallace maintains in common with many others. These problems that drive the exclusive utilitarian into various inconsistencies, can, I am convinced, be consistently explained by the theory of Divergence through Segregation.

26 Concession, Osaka, Japan.

XV.—*On a Viviparous Caddis-fly.* By J. Wood-Mason, Superintendent of the Indian Museum, and Professor of Comparative Anatomy in the Medical College of Bengal, Calcutta.

Some years ago, while studying a series of transverse sections through the body of a Trichopterous insect I had captured at the dinner-table lights, I noticed that the abdomen was crammed from end to end with partially developed ova. On the 25th October last I caught a second specimen of the same species, which also proved to be a gravid female. Remembering my former observation, and having often observed that gravid females of the viviparous forms of Muscidæ bring forth their young on falling accidentally into the spirit of the dissecting-dish, I threw the insect alive into a liqueur-glass of whiskey that happened to be ready at hand. The moment that

the insect began to feel the effects of the alcohol there issued from the extremity of its abdomen in a dense cloud innumerable tiny living creatures, which wriggled convulsively in the fluid for some seconds before they died. These tiny creatures, on examination under the microscope, proved to be Trichopterous larvæ possessing all the characters, namely the slender and tapering body, the laterally-expanded and dorsally-humped first abdominal segment, but above all the disproportionately long and slender third pair of legs, of those of typical Leptoceridæ. They closely resemble the larva that forms the subject of De Geer's pl. xv. fig. 10 (Hist. des Ins. t. ii. pt. i.), which undoubtedly represents the larva of a species of the same family. They measure about ·75 millim. in length and about ·125 in breadth; they number no less than 460, according to my native artist, who measured and counted them for me. As is often, if not invariably, the case with Trichopterous larvæ of the first stage, no tracheal gills are present, at least none are to be detected.

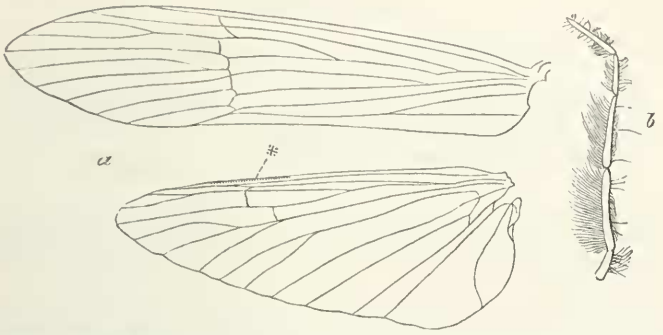
No trace of the gelatinous secretion by which the eggs of the oviparous forms are bound together in masses was detectable either in the body of the mother or amongst the extruded brood.

The abdomen of the female still retains the distended condition it had before parturition, and presents itself as a thin and transparent membranous sac, the walls of which bear both on the dorsal and on the ventral side a longitudinal series of exceedingly short, transverse, brown bands, representing the more firmly chitinized terga and sterna of its constituent segments. The four penultimate of these segments appear to be extended and stretched, both in the longitudinal and in the transverse direction, to the limit of the extensibility of all their interarticular membranes, being separated from one another both above and below and at the sides by long and equal membranous intervals, while the four basal are stretched to little more than half the extent of their membranes in any part; so that the posterior half of the abdomen would seem to be that which gives lodgment to the main mass of the brood-pouch. The abdomen is in fact expanded for the accommodation of the developing brood much more after the fashion of that of the white-ant queen for her eggs than of those of the viviparous Coleoptera of the genera *Spirachtha* and *Corotoca* described by Schiödte.

The mother insect, which is of a dull golden-brown colour, has the antennæ equal to the anterior wings in length and is furnished with a retinaculum; it agrees in all essential particulars with McLachlan's diagnosis of the genus *Notanatolica*, to

which it is here referred under the provisional name of *N. vivipara*, in allusion to its remarkable mode of reproduction.

The following are amongst the points upon which further information in regard to this interesting animal is desirable, and will, it is to be hoped, soon be forthcoming:—(1) The nature of the brood-pouch—whether this is a uterine dilatation of an oviduct or of the vagina, as in some viviparous Diptera, or whether it is an invagination into the cœlome of the soft roof of the genital sinus, as in the Orthopterous genus *Panesthia*; (2) the habits of the larvæ—whether these are aquatic, as in most other species of this order, or terrestrial, as in the single instance of the *Enoicylæ*; (3) the male; and (4) the form of the larva-case.



Notanatolica vivipara, ♀.—*a*, the wings of the left side, × 2·5, * the retinacular hooks; *b*, the maxillary palp of the right side, × 2·5.

XVI.—*A Short Account of a small Collection of Myriopoda obtained by Mr. Edward Whymper in the Andes of Ecuador.* By R. I. Pocock, of the British (Natural-History) Museum.

So little is known of the Myriopod fauna of Ecuador that any collection of these animals from that country is deserving of especial notice. But Mr. Whymper has added largely to the interest of his collection by devoting particular attention to the species found at great altitudes. This has been so rarely done by collectors that it is not yet possible to formulate any general laws with regard to the vertical range of the species of this much neglected group of animals; but, so far as any conclusion can be drawn from the small amount of material